OVERVIEW
The motor control development toolbox offers support for motor control application development, enabling control engineers and embedded developers to help shorten project life cycles.

The motor control development toolbox includes:

- Integrated Simulink®-embedded target supporting NXP MCUs for direct rapid prototyping and processor-in-the-loop (PIL) development workflows
- Peripheral device interface blocks and drivers
- Target-optimized math and motor control algorithm blocks for efficient execution on the target MCU
- Bit-accurate simulation results in the Simulink simulation environment

The motor control development toolbox generates all the code required to start up the MCU and run the application code, while supporting builds with multiple compilers.

TARGET APPLICATIONS
- Aerospace and defense
- Automotive control design
- Embedded system development
- Industrial automation
- Machinery real-time systems

FEATURES
- Built-in support for direct code download to the target MCU through the RAppID Boot Loader utility
- Useful for applications outside of motor control
- Complimentary license
- Built-in support for NXP FreeMASTER—a real-time debug monitor and data visualization tool interface. It provides visibility into the target MCU for algorithm calibration and tuning, making it ideal for advanced control systems and those required by motor control development, with:
  - Monitor signals in real time on the embedded target
  - Data logging
  - Signal capture
  - Parameter tuning
**MCU SUPPORT**

**Summary of Device Driver Blocks Provided**

<table>
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<tr>
<th>MCUs:</th>
<th>CAN</th>
<th>SPI</th>
<th>PWM</th>
<th>ADC</th>
<th>GPIO</th>
<th>Timers</th>
<th>ISR</th>
<th>GDU</th>
<th>CTU</th>
<th>PDB</th>
<th>LIN</th>
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**PRODUCT REQUIREMENT**

- MATLAB® (32-Bit or 64-Bit)*
- Simulink
- MATLAB coder
- Simulink coder
- Embedded coder

*Earlier released products only support 32-bit

Support available via the NXP community at: [https://community.nxp.com/community/mbdt](https://community.nxp.com/community/mbdt)

Download the tool at [www.nxp.com/mctoolbox](http://www.nxp.com/mctoolbox)

**AUTOMOTIVE MATH AND MOTOR CONTROL LIBRARIES**

**EMBEDDED SOFTWARE AND MOTOR CONTROL LIBRARIES**

**General trigonometric and basic functions (GFLIB)**
- Trigonometric functions
- Limitation functions
- PI Controller functions
- Linear interpolation
- Hysteresis function
- Signal Integration function
- Sign function
- Signal ramp function

**General motor control functions (GMCLIB)**
- Clark transformation
- Park transformation
- Duty cycle calculation
- Elimination of DC ripples
- Decoupling of PMSM motors

**General digital filters functions (GDFLIB)**
- Finite impulse filter
- Moving average filter
- First order infinite impulse filter
- Second order infinite impulse filter

**Mathematical Function Library (MLIB)**
- Absolute value
- Add
- Convert
- Divide
- Multiply accumulate
- Multiply-Subtract
- Multiply-Subtract-From
- Multiply
- Negative
- Normalize
- Bit shift
- Shift
- Subtract
- Vector multiply accumulate